



Data for the Trilateral Wadden Sea area: The TrilaWatt initiative Preliminary exemplary results on the development of tidal flat elevation

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Relevance and Research Objective

The trilateral Wadden Sea, UNESCO World Heritage Site, is a channel-shoal environment with numerous stressors such as tides, waves, or sea level rise. Planning and sustainable decision-making within this highly dynamic environment requires robust well-understood knowledge of these stressors. Descriptive long-term data of the entire trilateral Wadden Sea area, however, is not yet available.

Goals and Keypoints

- We provide public (FAIR), consistent, high-resolution data for efficient decision making for the period of 2000 to 2020
- These data will be available in a web environment

Preliminary Research Question: Can our tidal flats keep pace with sea level rise?

High-resolution bathymetric data products can be used to analyze the development of tidal flats.

Analysis method

Annual digital elevation models of the tidal flats were created in 10m resolution.

We calculated, based on all raster points between -2 and +2 mNHN, the mean elevation and area for each tidal flat (Baptist et al., 2019).

With these yearly results we carried out difference analyses to investigate long and short term trends.

Results

These trends were not uniform everywhere, locally and temporally. Noteworthy changes were observed, whereby the trends in the elevation and in the change of the tidal flat areas stood in contrast.



Figure: [a] Long-term mean elevation changes per year (cm/y) and [b] changes in area per year (%) for the time period 1991-2020. [c] Short-term mean elevation changes per year (cm/y) and [d] changes in area per year (%) for the time period 2011-2020.

References

- Baptist, M. J., Van Der Wal, J. T., Folmer, E. O., Gräwe, U. & Elschot, K. (2019). An ecotope map of the trilateral Wadden Sea. Journal of Sea Research, 152, S. 101761.



